

Digital Reading and Comprehension Experiences: A Focus on New Narratives and User Experience

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Abstract— This study investigates the impact of digital formats on reader comprehension within modern literature, specifically focusing on the influence of multimedia components and non-linear narrative structures. Employing a mixed-methods approach, the research analyzes a corpus of digital texts, including interactive fiction and enhanced e-books, to examine how hypertextual linkages, embedded media, and interactive elements affect reader interpretation. Cognitive functions, such as critical thinking, information processing, and attention span, are explored in relation to reader agency in navigating non-linear narratives and constructing meaning. Furthermore, semi-structured interviews were conducted with participants to explore their subjective experiences and comprehension processes. Thematic analysis of the interview transcripts, alongside a quantitative analysis of reader interaction data from the digital texts, provides a comprehensive understanding of the cognitive and experiential dimensions of digital reading. This research aims to delineate the potential advantages and challenges of digital reading, offering evidence-based recommendations for educators and designers to optimize the creation and utilization of digital texts for effective instruction.

Keywords— Digital Reading, Reader Experience, User Interface Design, Interactive Elements, Comprehension, Learning, Thematic Analysis, Mixed-Methods, Cognitive Processing

Introduction

The digital format has significantly transformed the way readers engage with contemporary texts. By offering interactive and dynamic experiences, digital platforms challenge traditional linear narratives (Huei-Chun, 2022) and introduce non-linear storytelling techniques. Hypertextual links, embedded videos, and other multimedia elements invite readers to explore texts in multiple directions, creating a more personalized and immersive reading experience. However, this shift also presents challenges to comprehension. While digital formats can enhance understanding by providing context and visual aids, they can also overwhelm readers with information overload. The rapid pace of digital culture can hinder deep reading and critical thinking, as readers may be tempted to skim through content rather than engage with it thoughtfully. Moreover, the fragmented nature of digital texts (Gubbins, 2012) can make it difficult to follow complex storylines and develop a coherent understanding of the narrative.

Strong reading comprehension skills are essential for understanding and appreciating literature. By developing these skills, readers can better grasp complex literary devices, analyze themes, and interpret the author's intent. Metacognitive reading strategies, such as active reading, questioning, and summarizing, can significantly enhance comprehension by making the reading process more intentional and engaging. These strategies empower readers to get deeper into texts, identify key ideas, and connect them to personal experiences and broader contexts. Ultimately, strong reading comprehension skills are the foundation for a rich and rewarding literary experience (Reza Ahmadi et al., 2013). However, there are complex challenges confronted in modern storytelling, with non-linear plot constructions, digital formats, and complex social issues, demanding refined reader skills in interpretation and understanding.

Digital tools facilitate a more collaborative and fragmented approach to writing, where multiple voices and perspectives can contribute to a single text. This shift is evident in the

rise of hypertextual and networked literature, which emphasizes interconnectivity and reader participation, ultimately blurring the lines between author and reader.(Antonielli, 2023)

The advent of digital technology has ushered in a new era of storytelling, where interactive digital narratives offer immersive experiences that blur the lines between creator and consumer. This emerging narrative style leverages the power of new media to engage audiences in unprecedented ways.(Sanchez-Lopez et al., 2020) Sociotechnical imaginaries, shaped by influential stakeholders, envision future social and technological landscapes. To foster more democratic and sustainable futures, we need to broaden the scope of innovation narratives. However, replacing dominant policy narratives isn't merely a matter of presenting scientific truths; it requires a deeper understanding of the complex interplay between knowledge, belief, and agency within research and innovation systems. (Strand et al., 2018)

Traditional literary studies often prioritize critic-centered interpretations, neglecting the active role of the reader. This approach can hinder student learning by discouraging active engagement with texts and focusing solely on surface-level information. Schema theory (Swaffar, 1986) suggests that efficient readers actively construct meaning by organizing textual information. Encouraging students to read for facts rather than actively analyzing and interpreting the text can limit their comprehension and retention. Hence Multimodal narratives, digital storytelling, and the integration of visual and interactive elements can significantly enhance readers' comprehension skills by fostering a more dynamic and engaging reading experience.

Reader-response theory emphasizes the active role of the reader in constructing meaning, fostering a dynamic interaction between the reader and the text. By engaging in discussions and sharing interpretations, learners can deepen their understanding, develop critical thinking skills, and build a stronger connection with the text. This theory promotes active and meaningful reading, ultimately enhancing comprehension and fostering a more holistic reading experience.(Mart, 2019)

Research comparing comprehension in digital versus print formats reveals a recurring trend: readers often experience reduced comprehension when reading on digital devices compared to paper, especially with complex or long texts. Studies suggest that the tactile and focused nature of paper encourages better comprehension retention (Lebedeva et al., 2020). A study examined the knowledge gap hypothesis by comparing the comprehension of news information between individuals with different education levels across newspaper and online formats. The findings revealed that

while highly educated individuals could access information equally well from both sources, those with lower education levels benefited more from traditional newspaper formats (Yang & Grabe, 2011).

Hence, we can find Digital formats though offers personalized reading experiences with hyperlinks and multimedia, the information overload and rapid consumption can hinder deep reading and critical thinking.

Analysis of Contemporary Digital Stories and their Interactive Elements

Digital Text 1 – “Snow Fall: The Avalanche at Tunnel Creek” (The New York Times)

The interactive elements included to enhancing the reading experience are: **parallax scrolling with environmental animations**, a technique that creates a sense of depth and immersion by layering multiple visual elements that move at different speeds as the reader scrolls. For instance, the background might slowly shift while foreground objects move more rapidly, simulating a three-dimensional effect. **Environmental animations**, such as falling snow or swaying trees, further enhance the immersive experience, drawing the reader into the narrative. The integration of videos, photos, and audio clips enriches the storytelling by providing multiple sensory inputs. Videos can capture the dramatic moments of the avalanche, while photos offer detailed visual information about the aftermath. **Audio recordings**, such as interviews with survivors or experts, add a personal touch and bring the story to life. **Interactive maps** allow readers to visualize the path of the avalanche and understand the scale of the disaster. By zooming in and out, exploring different perspectives, and following the progression of the avalanche, readers can gain a deeper understanding of the event. **Real-time weather animations**, such as wind gusts and snowfall, create a dynamic and realistic representation of the conditions leading up to the avalanche. These animations can help readers visualize the severity of the weather and the challenges faced by those involved.

Let us see the impact on comprehension these can possibly have, by visually representing the terrain, readers can better understand the physical context of the story. This spatial understanding aids in comprehending the scale of the event and the challenges faced by the characters. The integration of snow animations and wind sounds creates a multisensory experience, drawing the reader deeper into the narrative. These elements can evoke emotional responses and enhance the reader's empathy for the characters. The smooth transition between text, images, videos, and audio ensures a cohesive and engaging reading experience. By avoiding abrupt shifts in format, the narrative flow remains uninterrupted, allowing readers to focus on the story. The

gradual unveiling of information prevents cognitive overload and maintains reader interest. By pacing the delivery of content, the reader can process the information effectively and build a clear understanding of the events.

However, there do exist possible potential barriers like while multimedia can enhance comprehension, excessive use can distract from the core narrative. Overwhelming the reader with too many visual and auditory elements can hinder their ability to focus on the text. Access to the interactive experience may be limited by factors such as device compatibility, internet connectivity, and browser capabilities. This can exclude certain readers from fully engaging with the story. Continuous scrolling can disrupt the reading rhythm and make it difficult to return to specific sections of the text. This can be particularly problematic for readers who prefer a more linear reading experience.

Digital Text 2 – "Firestorm" (The Guardian)

Interactive elements employed here are **full-screen video backgrounds**, these immersive visuals transport the reader to the heart of the Australian bushfire, creating a powerful emotional connection to the story. However, it's essential to balance the visual impact with text readability, ensuring that the text is easily discernible against the background. Then **chapter-based navigation** which is a structured approach that allows readers to explore the story at their own pace. By breaking down the narrative into manageable chunks, readers can easily navigate through the content and focus on specific areas of interest. Another element is **interactive photo galleries**; these galleries offer a deeper dive into the visual aspects of the story. By allowing readers to zoom in on images and view them in full-screen mode, the details of the bushfires can be examined closely. And finally, **audio narratives with transcripts**, these audio narratives provide an alternative way to engage with the story. Transcripts offer additional support for readers who prefer a visual or textual format.

Impact on comprehension of these elements would be visual immersion where the full-screen video backgrounds create a powerful immersive experience that can enhance emotional engagement and comprehension. multiple entry points offering various formats (text, video, audio) that caters to different learning styles, ensuring that all readers can find a way to connect with the story. Clear chapter structure which provides a clear organizational framework, making it easier for readers to follow the narrative and retain information. parallel narrative streams allowing readers to explore different aspects of the story simultaneously, the interactive elements can encourage deeper understanding and critical thinking.

Potential barriers that can hinder the comprehending skills of the reader would be complex navigation, a cluttered or

confusing navigation interface can hinder the reader's experience. A clear and intuitive design is crucial to avoid overwhelming users. Similarly, video backgrounds though are visually striking, can compete with the text and make it difficult to read. It's important to balance the visual impact with text readability. Heavy use of multimedia elements can strain device resources and slow down the loading time, potentially frustrating users. Optimizing the design for different devices and internet speeds can help mitigate this issue.

Digital Text 3 – "Welcome to Pine Point" (National Film Board of Canada)

The unique and interesting interactive elements incorporated in this digital text are **scrapbook-style interface**, this nostalgic design evokes a sense of personal history, inviting the reader to delve into the past. The scrapbook metaphor provides a familiar and intuitive framework for exploring the narrative. **User-controlled progression** allowing users to navigate the story at their own pace, this approach caters to individual learning styles and preferences. Readers can revisit specific sections, skip ahead, or take detours, fostering a more personalized experience. **Mixed media presentation** where the combination of text, images, audio, and video offers a multisensory experience that can enhance comprehension and memory retention. By engaging multiple senses, the reader can develop a deeper understanding of the story. **Interactive artifacts and memorabilia**, incorporating interactive elements like letters, diaries, and photographs can bring the past to life. By clicking on these artifacts, readers can uncover hidden details, listen to audio recordings, or view additional images, enriching the narrative.

The enhancing factors that created the desired impact on comprehension skills of the readers are emotional connection, the personal nature of the scrapbook format can evoke strong emotional responses, making the story more relatable and memorable. Active participation by navigating through the story makes the readers become more engaged and invested in the narrative. This active involvement can enhance comprehension and retention. Multiple narrative layers that allows multiple layers of information, providing a more comprehensive understanding of the historical context. The tactile interface metaphor, the familiar scrapbook interface can possibly make the navigation experience more intuitive and user-friendly.

Nonlinear Structure though offers flexibility, it may confuse readers who prefer a more traditional, linear narrative. Similarly, fragmented narrative focus while engaging, can potentially disrupt the flow of the narrative. It's essential to balance the interactive elements with the core story. The

learning curve, it may require some initial learning time on the side of the reader to get the whole of the text. Clear instructions and a user-friendly design can help mitigate this issue. These are potential barriers that could hinder the comprehending skill of the reader.

From the above analysis we can see in interactive storytelling, cognitive load poses a significant challenge, as multiple elements compete for the reader's attention. Complex navigation demands cognitive effort, often disrupting narrative flow. Technical issues—such as slow loading and unresponsive interfaces—further hinder the experience, while access barriers (device requirements, bandwidth needs, technical literacy) can exclude some readers, particularly those with disabilities or limited access. Maintaining narrative coherence is crucial; too much freedom leads to confusion, while excessive constraint stifles creativity. Optimizing interactive elements for comprehension requires a multi-faceted approach. Progressive disclosure, where information is revealed gradually, helps prevent overload and lets readers control their learning pace (García, 2023). Multimodal support—using visuals, audio, and interactive features—enhances understanding by appealing to diverse learning styles (Yohannes et al., 2023). Visual aids like diagrams and infographics clarify complex ideas, while audio elements add depth. Ensuring alignment between content and interactive elements reinforces learning objectives effectively.

Qualitative Interview with Digital Readers

Methodology

50 digital readers were recruited to participate in this study. The participants were selected based on their regular consumption of digital content, including e-books, online articles, and digital magazines. Semi-structured interviews were conducted with each participant. The interviews were approximately 30 minutes in length and were conducted face to face.

Table 1: Profile of the Digital Readers

Number of Digital Readers	50 (22 Male and 28 Female)
Age	Range 18 - 45
Basic Educational Qualification	UG - PhD

The interview consisted of six open-ended questions designed to elicit information about the participants' experiences with digital reading. The questions were as follows:

- How do you feel about reading digitally compared to traditional print formats? What strategies do you use to stay engaged and focused while reading digitally?
- Do you find it easier or harder to comprehend information when reading digitally? What factors influence your understanding of digital texts?
- How do you process information when reading digitally? Do you use any specific techniques or strategies?
- Do you believe that digital reading promotes critical thinking and analysis? How do you evaluate the credibility and reliability of information found online?
- How has digital reading impacted your overall learning experience? What are the advantages and disadvantages of digital reading for learning?
- What are your preferred formats for digital reading (e.g., e-books, online articles, digital magazines)? How often do you read digitally?

Data Analysis

The interviews were transcribed verbatim and analyzed using thematic analysis. Thematic analysis involved identifying, analyzing, and interpreting patterns within the data. The analysis focused on the following themes:

- Engagement and Motivation: Factors influencing reader engagement and motivation.
- Comprehension and Understanding: Strategies used for comprehension and understanding.
- Information Processing: Cognitive processes involved in digital reading.
- Critical Thinking and Analysis: Evaluation of information and development of critical thinking skills.
- Learning Experience: Impact of digital reading on learning and knowledge acquisition.
- Reading Habits and Preferences: Preferred formats, frequency of reading, and reading behaviors.

Observations

A. Enhanced Engagement and Motivation

Many respondents expressed that digital reading is more engaging due to interactive elements, multimedia content, and the ability to customize the reading experience is promising (e.g., font size, theme). Some highlighted the convenience of digital reading, especially for those with visual impairments or physical limitations. The ability to adjust font size, brightness, and text-to-speech features makes reading more accessible is what they said. Digital platforms often facilitate social interaction and community building around shared reading interests. This actually enhanced engagement and motivation. Also many respondents cited distractions as a major challenge to focus and engagement while reading digitally. Notifications,

social media, and other online temptations can disrupt the reading flow. A common concern was the absence of a physical book, which can be a tangible and nostalgic object that fosters a deeper connection to the text.

Suggestions

Using dedicated reading apps and software can minimize distractions and optimize the reading experience. Mindful Reading Techniques like active reading, annotation, and summarizing can improve focus and comprehension. Also creating a Dedicated Reading Space, a specific area for digital reading can help reduce distractions and create a conducive environment. Finally setting specific reading times and taking regular breaks can help maintain focus and prevent fatigue.

B. Comprehension and Understanding

Many readers reported using skimming and scanning techniques to quickly identify key points and relevant information. This can be particularly useful for long articles or complex texts. Highlighting and Note-Taking was also mentioned by few readers as it allowed the users to highlight text, add notes, and bookmark important passages. These features enhanced comprehension and retention. Some readers relied on built-in tools like dictionaries, thesaurus, and translation features to clarify unfamiliar words and concepts. Strategies like questioning, summarizing, and visualizing was also said to be applied to digital texts by the respondents to deepen understanding. However, they also stated that Pop-up ads, auto-playing videos, and other distracting elements hindered comprehension. Also, prolonged screen time led to eye strain and reduced cognitive capacity, affecting comprehension. Unlike physical books, digital texts lacked physical cues like page numbers and chapter breaks, which made it difficult to track progress and orient oneself within the text was the stand of many respondents.

Suggestions

Mindful Reading that is focusing on the content and minimizing distractions can improve comprehension. Using Text-to-Speech Features which means listening to the text can be helpful for some readers, especially those with visual impairments or learning disabilities. Overall creating a Conducive Reading Environment - a quiet, well-lit space can enhance focus and comprehension. Finally, shorter, frequent reading sessions can be more effective than long, uninterrupted periods.

C. Information Processing and Critical Thinking

Many readers reported using these techniques to quickly identify key points and relevant information. This is particularly useful for long articles or complex texts. Techniques like questioning, summarizing, and visualizing

helped readers engage with the text more deeply. Some readers engaged in multitasking while reading digitally, such as listening to music or watching videos. Regarding the evaluation of information and the development of critical thinking skills, respondents are aware of the importance of evaluating the credibility and reliability of online sources. They used techniques like checking the author's credentials, verifying information with other sources, and considering the overall tone and purpose of the text. Some readers actively sought out additional information to verify claims made in digital texts. Many respondents believed that digital reading fosters critical thinking skills.

Suggestions

Utilizing digital tools like annotation tools, mind mapping software, and research databases to support information processing and critical thinking can be the best to improve critical thinking. These tools can help readers organize information, identify patterns, and generate new ideas.

D. Learning Experience and Reading Preferences

Many reported that digital reading has positively impacted their learning experiences. The ability to access a vast amount of information, customize the reading experience, and engage with multimedia content enhanced understanding and retention. Digital reading has fostered a lifelong learning mindset by providing easy access to a wide range of topics and subjects. Some argued that digital reading has improved writing skills as the readers are exposed to diverse writing styles and formats. Regarding reading habits and preferences, respondents shared that they prefer e-books, online articles, or digital magazines, depending on the content and their personal preferences. The frequency of digital reading varied widely among individuals. Some read daily, while others read occasionally. Readers engaged in different reading behaviors, such as skimming, scanning, or deep reading, depending on the purpose of their reading. Some readers enjoyed discussing books and articles with others online, either through social media or dedicated reading forums.

Suggestions

Developing adaptive digital reading platforms that can tailor content and difficulty levels to individual learners' needs and preferences can be done. By providing personalized recommendations and challenges, these platforms can motivate readers and optimize their learning experience.

CONCLUSION

The digital age has transformed reading. While digital texts offer accessibility and engagement, challenges like

distractions and information overload persist. Striking a balance between digital and traditional reading is key. To enhance digital reading, prioritize content clarity over technical novelty, integrate interactive elements thoughtfully, and offer diverse navigation options. User-friendly interfaces with clear navigation cues, optional interactivity, and progressive enhancements are crucial. Well-structured content with clear hierarchies, balanced pacing, and multiple entry points can significantly improve comprehension. By combining these design principles and user experience considerations, we can harness the power of digital technology to foster a more engaging and effective reading experience.

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